BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NO. 2018-318-E

In the Matter of:	)	
	)	**DIRECT TESTIMONY OF**
Application of Duke Energy Progress, LLC	)	**DONALD SCHNEIDER, JR.**
For Adjustment of Rates and Charges	)	**FOR DUKE ENERGY**
Applicable to Electric Service in South	)	**PROGRESS, LLC**
Carolina	)	

I. INTRODUCTION AND SUMMARY

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Donald L. Schneider, Jr., and my business address is 400 South Tryon Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services, LLC ("DEBS"), as General Manager, Advanced Metering Infrastructure ("AMI") Program Management. DEBS provides various administrative and other services to Duke Energy Progress, LLC ("DE Progress" or the "Company") and other affiliated companies of Duke Energy Corporation ("Duke Energy").

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AS GENERAL MANAGER, AMI PROGRAM MANAGEMENT, FOR DUKE ENERGY.

A. My duties and responsibilities include managing the project execution of all AMI or "smart meter" related projects for all Duke Energy jurisdictions, including DE Progress. I am also responsible for reporting and mapping related to AMI, as well as all the systems involved in the control of AMI communication networks and management of AMI data.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. I received a Bachelor of Science Degree in Electrical Engineering from the University of Evansville (Indiana) in 1986. Upon graduation, I was employed by Duke Energy Indiana (then known as Public Service Indiana) as an

electrical engineer. Throughout my career with Duke Energy, I have held various positions of increasing responsibility in the areas of engineering and operations, including distribution planning, distribution design, field operations, and capital budgets. In 2006, I was named General Manager, Midwest Premise Services, responsible for managing all of Duke Energy's Midwest premise service and meter reading departments. Following this, in 2008, prior to the Duke Energy/Progress Energy merger, I was promoted to a position responsible for managing the project execution for all Grid Modernization projects in the field, including both AMI and Distribution Automation ("DA") devices, for all legacy Duke Energy jurisdictions. In 2012, following the Duke Energy/Progress Energy merger, I was named to my current position. Additionally, I have been registered as a professional engineer with the State Board of Registration for Professional Engineers in the state of Indiana since 1995.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION OR ANY OTHER REGULATORY BODIES?

A. I have not testified before this Commission; however, I have testified for DE Progress and Duke Energy Carolinas ("DE Carolinas") in North Carolina before the North Carolina Utilities Commission; for Duke Energy Ohio before the Public Utilities Commission of Ohio; for Duke Energy Kentucky before the Kentucky Public Service Commission; and, for Duke Energy Indiana

before the Indiana Utility Regulatory Commission in cases related to AMI and smart grid topics.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe the Company's progress in deploying AMI technology across its South Carolina service territory. I also highlight some of the benefits to customers of the AMI technology by providing them with greater convenience, control and transparency.

II. AMI IMPLEMENTATION

Q. WHAT IS AMI?

A. AMI is the term used to refer to a comprehensive metering solution – including meters, communication devices, communication networks, and back office systems – used to create two-way communications between customer meters and the utility. It is an overall metering solution, as opposed to just a new type of meter that allows remote meter reading, which eliminates walk-by and/or drive-by meter reading. An AMI system consists of an advanced meter, a Field Area Network (FAN), and back-office systems that manage and maintain data collected from the meters. AMI meters - often referred to as smart meters - are digital electricity meters that have advanced features and capabilities beyond traditional electricity meters. Some of the advanced features include the capability for two-way communications, interval usage measurement, tamper detection, voltage and reactive power measurement, and net metering capability. Duke Energy's standard AMI system utilizes radio

frequency ("RF") mesh architecture for the FAN, which is flexible in that the meters within the mesh network establish an optimized RF communication path to a collection point either through other meters or, in some cases, through network range extenders.

AMI allows customers access to more detailed usage information (down to the hour) via the Duke Energy online customer portal. Regular meter reads and off-cycle meter reads (for the purpose of transferring service) can be performed remotely for all customers, eliminating the need for a technician to come to the customer's premise. Additionally, service connections and disconnections can be performed remotely for the majority of customers who are starting and/or stopping service, again, eliminating the need for a technician to come to the customer's premise. During storm outages, damage assessment and repair verification can be done much more quickly when customers have a smart meter.

Q. IS AMI TECHNOLOGY NEW TO THE STATE OF SOUTH CAROLINA?

A. No. As noted in Appendix J of the 2016 South Carolina State Energy Plan[1], AMI technology is not new to South Carolina. By 2016, each of the utility companies in the state had installed at least some AMI meters, and South Carolina's electric cooperatives already had a 92 percent penetration of AMI metering by then.

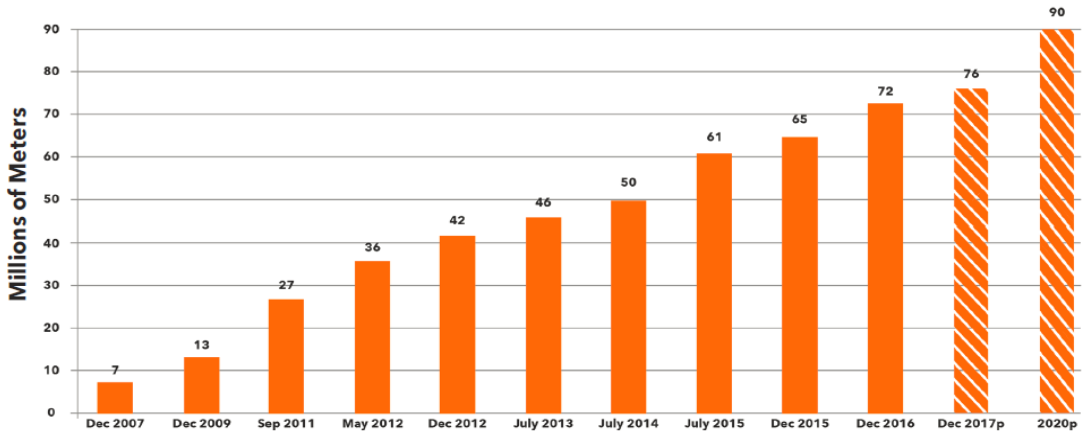
[1] Office of Regulatory Staff, South Carolina Energy Plan (2016)

Smart Meter Penetration in South Carolina						
Utility	Total Number of Meters	Manually Read Meters	AMR Meters	AMI Meters	Number of Meters Time of Use Rate Ready	Number of Meters Implementing Time of Use Rate
SC Electric Cooperatives	756,137	-	58,412	697,726	477,402	54,035
Duke Energy Carolinas	587,976	8,806	485,119	94,051	94,051	5,609
Duke Energy Progress	172,549	2,988	161,337	8,224	8,224	4,977
Santee Cooper	172,362	57,991	114,014	357	66	66
SCE&G	696,410	178	686,058	10,174	10,174	1,341
Municipalities	172,749	45,298	82,260	44,813	39,202	27,163
Total	2,558,183	115,261	1,587,200	855,345	629,119	93,191

According to research by the Edison Foundation[2], smart meter installations have been growing dramatically since 2007. The figure below projects smart meter deployment will reach 90 million by 2020.

As shown in Figure 1, smart meter installations have grown dramatically since 2007. As of year-end 2016, electric companies had installed 72 million smart meters, covering more than 55 percent of U.S. households. Based on survey results and approved plans, estimated deployments are expected to reach 76 million smart meters by the end of 2017 (covering 60 percent of U.S. households) and 90 million by 2020.

Figure 1: U.S. Smart Meter Installations Approach 76 Million; Projected to Reach 90 Million by 2020



[2] Adam Cooper, *Electric Company Smart Meter Deployments: Foundation for a Smart Grid* (Dec. 2017)

Q. ARE YOU FAMILIAR WITH THE AUTOMATED METER READING SYSTEM ("AMR") OF DE PROGRESS?

A. Yes. The AMR system of DE Progress was designed so that meter reading equipment installed in vehicles could gather meter reads via a 900 MHz RF signal. After AMR meters were deployed, monthly meter reading was no longer performed by having to physically visit each meter, but instead was performed monthly as vehicles drove through neighborhoods collecting the readings being transmitted by the AMR meters.

Q. ARE THERE ANY LIMITATIONS WITH DE PROGRESS' AMR SYSTEM?

A. Yes. While the AMR system provided efficiencies over physically visiting and reading each meter, its single monthly meter readings provide limited energy usage information. The AMR system also requires vehicles to drive through neighborhoods for readings. Finally, the one-way communication with AMR meters does not supply customers or the Company with expanded capabilities for enhanced customer services and programs.

Q. PLEASE DESCRIBE THE IMPLEMENTATION OF AMI ACROSS THE DE PROGRESS SYSTEM.

A. Based on previous experience deploying smart meters in other Duke Energy jurisdictions, including DE Carolinas, DE Progress is deploying the AMI technology by zones. To efficiently and effectively deploy AMI, the Company first strategically places the FAN equipment in a deployment zone.

Then the Company installs smart meters that will communicate through the FAN collection point equipment, or other nearby collection point equipment, allowing some overlap for redundancy purposes. This process is repeated on a rolling basis, in which the Company will begin new zones while deployment in other zones is underway. Once deployment is complete in a zone, there may still be ongoing work to relocate collection points or install range extenders in order to optimize the FAN.

An AMI implementation is not a simple meter change-out project. In addition to changing out the meters, AMI covers all of the components necessary to communicate with the advanced meters and collect usage data and event information from them. The system includes advanced meters, a two-way FAN, and central computer systems.

As of September 2018, DE Progress had installed over 38,000 smart meters in its South Carolina service territory. The plan is to continue AMI implementation through early 2020 for the remaining approximately 128,000 DE Progress South Carolina meters in scope. For AMI meters installed after December 31, 2018, the Company has proposed in this case to continue the accounting treatment of costs related to AMI meters, which was originally approved by the Commission in Order No. 2018-553, Docket No. 2018-205-E (August 9, 2018) until the Company's next base rate case. Witness Bateman addresses the deferral in her testimony.

Q. IS THE COMPANY FOLLOWING THE SAME PROCESS FOR DEPLOYING AMI THAT WAS USED BY DE CAROLINAS?

A. Overall, the process is the same. Based on lessons learned from the DE Carolinas deployment, DE Progress adopted some changes to the door hangers left at customers' residences such as including the messaging in both English and Spanish. Additionally, DE Progress incorporated more Duke Energy logos onto the contractors' trucks and vests so customers would know who was on their property.

Q. IS THERE AN ALTERNATIVE SOLUTION FOR CUSTOMERS WHO DO NOT WISH TO HAVE A SMART METER?

A. Yes. The Commission approved the Company's request to revise the Meter Related Optional Programs Rider MROP to include a Manually Read Metering option on September 26, 2018 (hereinafter the "opt-out program"), which addresses the customers who have objected to the installation of a smart meter. The Company will begin enrolling customers in the opt-out program in April 2019, after the completion of necessary IT system changes. Until the opt-out program is available, DE Progress has been bypassing customers who object to smart meter installation.

Q. ARE COSTS FOR THE AMI IMPLEMENTATION INCLUDED IN THIS RATE CASE?

A. Yes. The Company is seeking to costs representing the incremental operating and maintenance expense and the depreciation expense incurred for the installed AMI meters, as well as the associated carrying costs of the investment and deferred costs at its weighted average cost of capital. These costs were deferred into a regulatory asset account approved by this Commission in Order Number 2018-553. Further, the Company is seeking a deferral of the future costs associated with deployment of AMI. Both the current recovery and future deferral request and are discussed in detail in Witness Bateman's testimony.

III. AMI BENEFITS TO CUSTOMERS

Q. HOW WILL THE AMI IMPLEMENTATION DIRECTLY BENEFIT THE COMPANY'S CUSTOMERS?

A. The AMI technology is customer-focused; it enables greater convenience, control and transparency over a customer's energy consumption. Customers with smart meters have access to detailed information about their hourly and daily usage patterns through the Duke Energy online customer portal so they can make more informed choices regarding how they use energy. With the capability to record interval usage data, smart meters are a foundational technology that can enable new rate designs, as referenced in Witness Wheeler's testimony. Likewise, this additional data, combined with the new

Customer Connect System, referenced in Witness Hunsicker's testimony, will provide the Company with expanded options and flexibility in supporting enhanced customer services and programs.

All customers receiving smart meters will benefit from the greater convenience that enables DE Progress to perform regular meter reads and off-cycle meter reads remotely. Additionally, with the remote disconnect and reconnect capability of AMI meters, electric customers who become eligible for disconnection for non-payment will have power restored more quickly through the remote reconnect capability, than they would if DE Progress had to send a technician on site.

Finally, smart meters will be integrated into Company efforts to increase communications with customers about outages and restoration timelines. DE Progress will have the capability to interrogate individual smart meters or masses of smart meters to determine if customers have power. During the damage assessment phase of a storm, the mass meter interrogation capability allows the Company to have a better view of where outages are located on the system. This functionality helps reduce the assessment time, thus reducing outage durations for customers. During the power restoration phase of a storm, the capability of mass meter interrogation enables the Company to determine whether power has been restored to each meter before leaving an area. For example, before the AMI deployment, if the Company restored power to a circuit that was experiencing an outage, DE Progress did

not know whether each individual home has been restored along that circuit. It could happen that power is restored to nearly all of the homes along the circuit, but that one or two homes continue to be without service due to some other individual issue. The Company formerly had no way of knowing if this has occurred until the customer notifies DE Progress that they are still without service, and by that time, the Company's crew may have moved on to a new area. Smart meters allow the Company to know whether individual customers are back in service before the Company moves on. And lastly, during the cleanup phase of a storm, when the Company is clearing out single-outage tickets, the capability of interrogating individual meters can tell the Company when a customer's power has already been restored, saving a truck roll to confirm power has been restored.

Q. IS THE COMPANY OFFERING ANY CUSTOMER PROGRAMS ENABLED BY SMART METERS?

A. Yes. Usage Alerts is available to all customers that have an AMI meter. This program provides eligible customers with an alert at the midpoint of their billing cycle showing their accumulated charges and forecast of their month-end bill. Usage Alert customers can customize their experience by choosing to receive threshold alerts that notify them when their charges are approaching/exceeding their monthly budget, allowing customers the opportunity to adjust their energy consumption before the end of a billing cycle. Usage Alert customers can further set and change their alert

preferences in the Usage Alert Dashboard and set a budgeted dollar amount and change their alert channel to text message. Pick Your Due Date allows eligible customers to select their desired billing due date from the 1st to the 31st of the month, better aligning with a customer's needs. Pick Your Due Date is scheduled to be available to DE Progress customers in Q1 2019.

IV. PREPAID ADVANTAGE PILOT PROGRAM

Q. IS DE PROGRESS PLANNING TO LAUNCH ANY CUSTOMER PROGRAMS ENABLED BY SMART METERS?

A. Yes, in accordance with S.C. Code Ann. § 58-27-250(c), DE Progress is seeking to launch a Prepaid Advantage Program Pilot ("Prepaid Advantage" or the "Pilot") in South Carolina in late 2019, similar to the Prepaid Advantage Program approved by the Commission for DE Carolinas in Docket No. 2015-136-E. Witness Wheeler attached the proposed tariff to his direct testimony. Prepaid Advantage provides customers with greater payment flexibility, allowing frequent cash payments, which may help customers better manage their finances. Prepaid Advantage does not require a deposit fee, allowing customers to use funds to which they otherwise would not have access. Additionally, if a Prepaid Advantage customer is disconnected for a negative balance, no reconnection fee is charged. Prepaid Advantage is designed to give customers the control and flexibility to make payments to their account before using electricity. Customers are able to view usage and account balance information on the Prepaid Advantage Customer Portal (using a

desktop computer or smart phone) and receive alerts through text messages, e-mail, or automated voice, at their discretion. Customers will be able to use this information to recognize higher than usual electricity consumption on a daily basis, thereby better understanding what drives their costs.

The Prepaid Advantage Pilot will seek to achieve the following objectives:

- Validate that the Prepaid technology and data exchanges work as designed and meet the needs of DE Progress South Carolina customers;
- Measure and track participant data, behavior and satisfaction to evaluate the need and feasibility to expand the program for DE Progress customers; and
- Test the program's overall ability to give customers the choice, control, and flexibility to pay, in real time, for electricity.

Q. HOW DO PREPAID ADVANTAGE PAYMENT REQUIREMENTS DIFFER FROM TRADITIONAL PAYMENT REQUIREMENTS?

A. Eligible residential customers must make a first time deposit of at least $40, applied to their usage, to set up their account and non-residential customers must make an advanced payment equal to a fourth of their average monthly charges. No credit check or deposit is required while a customer is a program participant. Should the customer exit the Program and return to a traditional billing schedule, a deposit may again be required. Customers may not have a past due balance in excess of $500. The Company will allow customers with outstanding balances below the $500 maximum to participate in the Pilot and

will apportion 25 percent of a given payment amount to outstanding balances, and 75 percent of a given payment amount to fund ongoing usage. There is no monthly fee to participate in the Pilot.

Q. WHAT ADDITIONAL ACCESS OR BENEFITS DOES THE AMI TECHNOLOGY OFFER PREPAID ADVANTAGE CUSTOMERS?

A. Customers participating in the Prepaid Advantage Pilot will have access to the Prepaid Advantage Customer Portal where they can access information, such as their energy usage and choose on-going communications preferences. Specifically, they have access to:

- Reports (view account balance, meter read and status, notification status, usage statement)
- Usage (view consumption and dollars remaining)
- Notifications (choose channels, times, frequency, etc.)
- Payments (select and pay by bank account, credit card, check, etc.)
- Autopay (opt-in for auto-refill account balance when estimated 2 days remaining)
- Balance information (view account balance, meter #)
- Support information (contacts)
- Usage at a glance (deferred balance, average daily consumption, past payment)
- Meter status (connected, disconnected)
- Usage info (statement snapshot, recent usage)

Q. PLEASE DESCRIBE HOW LONG THE PILOT SHOULD REMAIN IN EFFECT.

A. The Company requests the Pilot have an approved duration of one year from the effective date of the Pilot, although if the Pilot is as successful as DE Carolinas', the Company may seek to grow the Pilot or seek earlier termination of the Pilot in favor of a full scale offering to be filed with the Commission for approval.

Q. DOES THE COMPANY PLAN TO LIMIT PARTICIPATION TO A CERTAIN NUMBER OF DE PROGRESS CUSTOMERS?

A. The Company would seek a cap of 2,000 customers on the pilot program.

Q. DOES THE COMPANY PLAN TO REPORT TO THE COMMISSION ITS FINDINGS ON THE PILOT?

A. Yes, the Company will file a learnings report with the Commission on the Pilot's operation within six months of the Pilot's termination date.

Q. DOES THE COMPANY NEED TO SEEK A WAIVER OF ANY OF THE RULES OF THIS COMMISSION TO OFFER THE PILOT?

A. Yes, the Company understands that the Rules of this Commission serve as protection for consumers, and the Company understands the gravity of requesting rule waiver requests. Below, the Company explains how it will comply with certain Commission rules under the Pilot, and, where implicated, cites specific rules for which any waiver is requested along with the rationale for why a waiver of this rule is appropriate.

In its Application being filed concurrently with this testimony, the Company is seeking a partial waiver of Rule 103-352, *Procedures for Termination of Service* with respect to timing, the delivery method, and the information provided on any notice of disconnection, and delinquent payment arrangements would not be offered for participating customers. More specifically, rather than a mailed notice, the Company would only provide notification via telephone, text message or email, and only at 5 days, 3 days, and 1 day before the account balance is expected to be zero and disconnection would occur. The Company would disconnect service Monday through Friday from no earlier than 10:00 a.m. and normally not after 2:00 p.m. The customer's right to contact the Office of Regulatory Staff and to receive the winter moratorium and the recommendation to contact social service agencies would be included with information displayed on the customer's account on the Pilot website rather than with a telephone, text or email message. Participating customers would not be able to establish their accounts as a "special need" or "medical certificate" (moratorium account) unless they went off the Pilot. Customers wishing to designate a third party contact would do so by setting up the third party's telephone and/or email address to receive the required alerts.

In order to comply with Rule 103-330 *Customer Information* paragraph (c) and (d) regarding notification of rates available and notice of rate changes, the Company plans to use messaging on the Pilot account

screens to direct customers to this information on the Prepaid Advantage Customer Portal instead of providing the information via a bill insert. With respect to compliance with Rule 103-339 *Customer Billing*, a reconciliation statement will be provided at the end of the customer's normal billing cycle via the Prepaid Advantage website that will show the rate schedule, readings, usage and amounts, and any true-up adjustments.

V. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.